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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

BERGSTROM et al — Atty. Ref.: 3952-15

Serial No. 09/508,463 — Group: 1771

Filed: March 10, 2000 — Examiner: Pratt, Christopher

For: PRESSURE-LOADED PANEL AND USE FOR BOAT AND CONTAINER CONSTRUCTION

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April 14, 2003

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

DECLARATION

Hon. Commissioner of Patents
and Trademarks
Washington, DC 20231

Sir:

I Rainer Bergstrom declare as follows:

1. I am Rainer Bergstrom of Lehmusk. 49, Mikkeli, Finland, am a citizen of Finland and one of the inventors of the above-identified application.

2. I hold a Master of Science (Eng.) from the Helsinki University of Technology that was granted in 1978. I have been employed by Ahlstrom (the assignee of this application) since 1977. My present position at Ahlstrom is Research and Development Manager. I have acquired considerable expertise in

the field of panels formed of layers of woven and stitched fiber as a result of my education and employment.

3. My co-inventors and I discovered that a particularly strong rectangular rigid panel resulted by orienting the fibers of each layer of the panel at an angle of ±60 degrees from a long side of the panel, wherein the panel aspect ratio is at least 1.5. The panel aspect ratio is the ratio of the length of a long side of the rectangular panel to a short side of the panel.

4. Attached are "The Choice of Fibre Orientations In Laterally Loaded FRP Panels" (VTT Manufacturing Technology) and "Optimizing Fiber Orientation In Marine Laminates" (Ahlstrom Ultimate 60+) published reports of experimental results supporting our discovery. Panels with high aspect ratios, e.g., above 1.5, are less prone to load induced failures if the fiber orientation is held within a range of 55 degrees to 70 degrees, as is shown in Figure 6 of "The Choice of Fibre Orientations In Laterally Loaded FRP Panels".

5. The advantages of orienting the fibers at ± 55 to 75 degrees, and optimally at ± 60 degrees, were not apparent from prior art known to us or evident from the traditional fiber angle orientations of 0, 45, 90 and 180 degrees used in conventional fiber panels. While these traditional angles (0, 45, 90 and 180) degrees were known, I believe that persons of ordinary skill in the art of forming fiber reinforced panels of woven and stitched materials, would not have viewed it as being obvious to have fiber angle orientations other than 0, 45, 90 and 180 degrees, and would not have understood that any benefit would have resulted from using fiber angle orientations of 55 to 75 degrees.

6. Rigid panels having an aspect ratio above 1.5 and formed of laminated, bonded layers of woven and stitched fibers, wherein the fiber orientation is between 55 and 75 degrees, have enjoyed good commercial success. The commercial sales of the Ahlstrom Ultimate 60+ product (which has

the claimed characteristics) has been good and enjoyed a premimum price in the market over other structural panel products.

I declare that all statements made herein made of my own first-hand knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Mikkeli, April 14 2003

Rainer Bergström

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